

REMARKS

By this Amendment, Applicant cancels claims 1, 2, and 45-47, without prejudice or disclaimer of the subject matter thereof; adds new claim 48 to protect additional aspects of the invention; and amends claims 35-44 to adjust claim dependency, and not for reasons related to patentability. Claims 3-21 and 24-44 and 48 remain pending, of which claims 3-21 and 24-34 withdrawn are from consideration.

In the Office Action, the Examiner rejected claims 1, 2, and 35-45 under 35 U.S.C. § 103(a) as being unpatentable over Ohmi et al. (U.S. Patent No. 6,316,813); and rejected claims 43 and 47 under 35 U.S.C. § 103(a) as being unpatentable over Ohmi et al. in view of Furukawa et al. (U.S. Patent No. 6,333,229).

Claims 1, 2, 45, and 47 have been canceled, without prejudice or disclaimer of the subject matter thereof, and the rejection of these claims is moot.

Applicant respectfully traverses the rejections of claims 35-44 for the reasons set forth below.

I. Response to Rejection Under 35 U.S.C. § 103(a)

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. § 2143.03 (quoting *In re Wilson*, 424 F.2d 1382, 1385 (C.C.P.A. 1970)). Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. M.P.E.P. § 2143 at pp. 2100-122 to 127.

Claims 35-44 depend from new claim 48 and thus incorporate the elements of that claim.

Applicant submits that a *prima facie* case of obviousness has not been established for claims 35-44 because Ohmi et al. and Furukuwa et al., either taken alone or in combination, do not teach or suggest each and every element of claim 48. In particular, Ohmi et al. and Furukuwa et al. fail to teach or suggest the claimed combination including “a trench capacitor in the semiconductor substrate, the trench capacitor connected to one of the source and drain regions,” as recited in new claim 48.

Ohmi et al. discloses a “semiconductor device comprising source regions, drain regions, channel regions provided between the source and drain regions and gate electrodes provided for the channel regions through the gate insulative films.” Id. at col. 3, lines 20-24. However, Ohmi et al. fails to teach or suggest at least “a trench capacitor in the semiconductor substrate, the trench capacitor connected to one of the source and drain regions,” as recited in claim 48.

Furukawa et al. fails to cure the above-discussed deficiencies of Ohmi et al. Furukawa et al. discloses a T-gate FET formed by “[a] subtractive etch[, which] is used to selectively etch the material forming the cap of the T-gate and the material forming the stem of the T-gate in order to avoid the etching away of portions of the stem if the cap is misaligned relative to the stem.” Id. at Abstract. However, Furukawa et al. fails to teach or suggest at least “a trench capacitor in the semiconductor substrate, the trench capacitor connected to one of the source and drain regions,” as recited in claim 48.

In view of the above-described deficiencies of both Ohmi et al. and Furukawa et al., Applicants submit that new claim 48 is allowable over the applied references, and claims 35-44 are allowable at least due to their dependence from claim 48.

II. Conclusion

In view of the foregoing, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Attachment: Replacement Abstract

REPLACEMENT ABSTRACT

A semiconductor device includes a semiconductor substrate of a first conductivity type, a convex semiconductor layer of the first conductivity type on the semiconductor substrate, a source region and a drain region of a second conductivity type in the convex semiconductor layer, a gate insulator on side surfaces of the convex semiconductor layer and a top surface of the convex semiconductor layer, a gate electrode on a portion of the gate insulator between the source region and the drain region, and a trench capacitor. The trench capacitor is provided in the semiconductor substrate and is connected to one of the source and drain regions.